REMARKS

I. Elections/Restrictions

The Examiner indicated that restriction is required under 35 U.S.C. § 121 to one of the following inventions:

Invention I: Claims 1-12, drawn to a method for forming a micro tip for a micro probe utilized in testing semiconductor integrated devices, classified in class 438, and subclass 18.

Invention II: Claims 13,-24, drawn to an apparatus for a micro probe utilized in testing semiconductor integrated circuit devices, classified in class 324, subclass 754.

The Examiner indicated that the inventions are distinct, each from the other because of the following reasons. The Examiner argued that Inventions I and II are related as process of making and product made. The Examiner stated that the inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different products; or (2) that the product as claimed can be made by another and materially different process (i.e., citing MPEP §806.05(f)). In the instant case, the Examiner argued that the product as claimed can be made by another and materially different process such as one in which the process of thermally growing a thick oxide layer upon a substrate instead of depositing the method as recited in present claim 1, line 4.

Because these inventions are distinct, according to the Examiner's reasons stated herein and because the Examiner argued that the inventions have acquired a separate status in the art as shown by their different classification, restriction for examination purposes is suggested by the Examiner.

During a telephone conversation with attorney Randy W. Tung on 08/19/2003, a provisional election was made with traverse to prosecute the

invention of Group I, claims 1-12. Affirmation of this election is made by Applicant herein. Claims 13-24 have thus been cancelled by amendment as indicated herein.

II. Rejections Under 35 U.S.C. § 102(e)

Claims 1-5 and 10-12 were rejected by the Examiner under 35 U.S.C. § 102(e) as being anticipated by Givargizov et al, "Givargizov" (U.S. Patent No. 6,458,206).

Regarding claim 1, the Examiner argued that Givargizov discloses a method for forming a micro tip for a micro probe utilized in testing semiconductor integrated circuit devices, the method comprising the steps of (i.e., citing FIGS. 4A-E and related text of Givargizov): depositing a thick oxide layer (citing FIG. 4A, 104 of Givargizov) upon a substrate (citing FIG. 4A, 102 of Givargizov); and defining a micro tip (citing FIG. 4E, 120 of Givargizov) for a microprobe from the thick oxide layer upon the substrate through a plurality of subsequent semiconductor manufacturing operations performed upon the substrate and layers thereof, wherein a plurality of the micro tips are mass produceable and can be efficiently utilized in association with increasingly smaller sizes of semiconductor integrated circuit devices (i.e., citing col. 3, line 10 to col. 5, line 5 and FIGS. 4A-E of Givargizov).

Applicants respectfully disagree with this assessment. The Examiner cited FIG. 4A, 104 of Givargizov, arguing that oxide 104 of Givargizov constitutes a "thick oxide layer". The text of Givargizov does not indicate that reference numeral refers to a "thick" oxide layer. In fact, Givargizov at col. 5, line 19 refers only to an "interposed oxide layer 104" which is shown in FIG. 4A. It is clear that layer 104 is actually a thin layer as indicated in FIGS. 4A-4D of Givargizov. Layer 108 constitutes a thin layer, particularly with respect to substrate layer 102, based on the relative view of FIGS. 4A-4D of Givargizov. It is therefore clear from FIGS. 4A-4D, however, that layer 104 is not "thick". Applicants, on the other hand, refer the

Examiner to Applicants' patent application specification and drawings. Applicants' FIGS. 4 and 5 show an oxide layer that is much thicker with respect to the substrate than that of FIGS. 4A-4D of Givargizov.

Applicants disclose and teach a "thick oxide layer" as shown in Applicants' FIGS. 4 and 5, including related text thereof, in order to overcome the deficiencies of the prior art, including that of Givargizov. Applicants' FIGS. 4 and 5 clearly show a thick oxide layer that includes a thickness thereof in a thickness range approximately equal to at least half of a thickness of the substrate to approximately the total thickness of the substrate. Because a thick oxide layer is clearly disclosed in FIGS. 4 and 5, Applicants present a new claim 25 by amendment herein to indicate the features shown in FIGS. 4 and 5, which are not taught, suggested or disclosed by Givargizov. Applicants have additionally amended claim 1 as indicated herein to claim the step of depositing a thick oxide layer upon a substrate, wherein a thickness of said thick oxide layer is thick with respect to a thickness said substrate. It is believed that support for such amendments is present in Applicants' specification, particularly the view of FIGS. 4 and 5, and additionally, that such amendments do not constitute new matter. In fact, it is clear that FIGS. 4A-4D of Givargizov teaches away from a thick oxide layer of this type and instead teaches a layer that is thin with respect to the other layers and particularly the substrate.

The Examiner argued that FIG. 4E, 120 of Givargizov shows defining a micro tip for a microprobe from the thick oxide layer upon the substrate through a plurality of subsequent semiconductor manufacturing operations performed upon the substrate and layers thereof, wherein a plurality of the micro tips are mass produceable and can be efficiently utilized in association with increasingly smaller sizes of semiconductor integrated circuit devices (i.e., citing col. 3, line 10 to col. 5, line 5 and FIGS. 4A-E of Givargizov). FIGS. 4A-E of Givargizov does not teach, disclose or suggest a "thick oxide layer" which is thick with respect to the substrate. Similarly, col. 3, line 10 to col. 5, line 5 and FIGS. 4A-E of Givargizov also do not

teach, disclose, or suggest a "thick oxide layer" which is thick with respect to the substrate. Therefore, Givargizov does not show defining a micro tip for a microprobe from the thick oxide layer upon the substrate through a plurality of subsequent semiconductor manufacturing operations performed upon the substrate and layers thereof, wherein a plurality of the micro tips are mass produceable and can be efficiently utilized in association with increasingly smaller sizes of semiconductor integrated circuit devices.

Regarding claim 2, the Examiner argued that Givargizov discloses the step of adapting the micro tip of the microprobe for use with a micromachine (citing the abstract of Givargizov). The Applicants respectfully disagree with this assessment. The abstract of Givargizov indicates the following:

"AFM/STM probes are based on whiskers grown by the vapor-liquid-solid (VLS) mechanism. Silicon cantilevers oriented along the crystallographic plane (111) are prepared from silicon-on-insulator structures that contain a thin layer (111) on a (100) substrate with SiO2 interposed layer. At removal of solidified alloy globules inherent in the growth mechanism sharpening of the whiskers takes place and, in such a way, the probes are formed. Cross-sections of the wiskers grown by the mechanism on the cantilevers can be controllably changed during the growth process so that step-shaped whiskers optimal for fabrication of the probes can be prepared. Also, whiskers with expansions/contractions can be formed that are important for fabrication of probes suitable for investigations in coarse surfaces, complicated cavitites, grooves typical for semiconductor microelectronics, etc."

The aforementioned abstract does not mention the use of a micromachine. Applicants ask the Examiner to identify the element or elements of the abstract which constitute a micromachine. Without such a proper identification, the rejection to claim 2 should be withdrawn. Additionally, because claim 2 is based on claim 1, and Givargizov does not teach the use of a thick oxide layer, the rejection to claim 2 should be withdrawn. Applicants respectfully request that the rejection to claim 2 be withdrawn.

Regarding claim 3, the Examiner argued that Givargizov discloses the step of connecting the micro tip of the microprobe to a micromachine (citing col. 6, lines

31-60 and FIG. 15 of Givargizov). Applicants respectfully disagree with this assessment. Applicant's specification indicates that The micro probe, in association with the micro tip, may comprise a micromachine. The micro tip of the micro probe may be defined utilizing a plurality of micromachine manufacturing operations. Col. 6, lines 31-60 and FIG. 15 of Givargizov does not teach a micromachine of this type. Therefore, because col. 6, lines 31-60 and FIG. 15 of Givargizov does not teach a micromachine as disclosed by Applicants' claims and specification, the rejection to claim 3 should be withdrawn. Additionally, because claim 3 is based on claim 1, and Givargizov does not teach the use of a thick oxide layer, the rejection to claim 3 should be withdrawn. Applicants respectfully request that the rejection to claim 3 be withdrawn.

Regarding claim 4, the Examiner argued that Givargizov discloses the step of defining the micro tip of the microprobe utilizing a plurality of micromachine manufacturing operations (citing col. 3, lines 10 to col. 5, line 5 and FIGS. 4A-E of Givargizov). Applicants respectfully disagree with this assessment. Applicants' specification indicates that The micro probe, in association with the micro tip, may comprise a micromachine. The micro tip of the micro probe may be defined utilizing a plurality of micromachine manufacturing operations. col. 3, lines 10 to col. 5, line 5 and FIGS. 4A-E of Givargizov does not teach a micromachine of this type. Therefore, because Givargizov does not teach a micromachine as disclosed by Applicants' claims and specification, the rejection to claim 4 should be withdrawn. Additionally, because claim 4 is based on claim 1, and Givargizov does not teach the use of a thick oxide layer, the rejection to claim 4 should be withdrawn. Applicants respectfully request that the rejection to claim 4 be withdrawn.

Regarding claim 5, the Examiner argued that Givargizov discloses the step of performing a first lithography operation upon the substrate (citing FIG. 4A, 102 of Givargizov) and layers thereof following a deposition of the thick oxide layer (citing FIG. 4A, 104) upon the substrate. Applicants respectfully disagree with this

assessment. FIG. 4A, 102 and FIG. 4A, 104 of Givargizov does not mention, suggest or teach a lithography step at all. In fact, the language of col. 5, lines 13-26 does not mention the use of lithography, either first or second lithography operations thereof. Additionally, the language of col. 5, lines 13-26 of Givargizov, together with FIG. 4A, 102, 104 does not teach lithography and a "thick oxide layer". Therefore, because such features are not taught, disclosed or suggested by of Givargizov, the rejection to claim 5 should be withdrawn. Applicants respectfully request that the rejection to claim 5 be withdrawn.

Regarding claim 10, the Examiner argued that Givargizov discloses the step of forming the micro tip (citing FIG. 4E, 120 of Givargizov) for the micro probe on a substrate, wherein the micro tip is formed between a conductive metal layer and the substrate (citing FIGS. 4A-E of Givargizov). The Applicants respectfully disagree with this assessment. FIG. 4E, 120 and FIGS. 4A-E of Givargizov do not show a micro tip formed between a conductive metal layer and the substrate, and additionally, do not show a "thick oxide layer". Therefore, because such features are not taught, disclosed or suggested by of Givargizov, the rejection to claim 10 should be withdrawn. Applicants respectfully request that the rejection to claim 10 be withdrawn.

Regarding claim 11, the Examiner argued that Givargizov discloses the step of depositing a conductive metal layer (citing FIG. 4D, 124 of Givargizov) on top of the oxide layer (citing FIG. 4D, 104 of Givargizov). The Examiner therefore argued that Givargizov inherently discloses wherein the conductive metal layer may comprise an aluminum layer. The Applicants respectfully disagree with this assessment. The oxide layer of claim 11 constitutes a particular type of oxide layer, that is, a thick oxide layer which is thick with respect to the substrate. Givargizov, on the other hand, does not disclose such a thick oxide layer. Therefore, because such features are not taught, disclosed or suggested by of Givargizov, the rejection

to claim 11 should be withdrawn. Applicants respectfully request that the rejection to claim 11 be withdrawn.

Regarding claim 12, the Examiner argued that Givargizov discloses wherein the substrate (citing FIG. 4A, 102 of Givargizov) comprises a silicon substrate (citing col. 3, lines 33-40 of Givargizov). The Applicants respectfully disagree with this assessment, because FIG. 4A, 102 of Givargizov and col. 3, lines 33-40 of Givargizov do not teach, suggest or disclose a thick oxide layer which is thick with respect to the substrate, wherein the substrate happens to be formed from silicon. Therefore, because such features are not taught, disclosed or suggested by of Givargizov, the rejection to claim 12 should be withdrawn. Applicants respectfully request that the rejection to claim 12 be withdrawn.

III. Claim Rejections Under 35 U.S.C. § 103

The Examiner rejected claims 6 and 7 under 45 U.S.C. § 103(a) as being unpatentable over Givargizov as applied to claims 1-4 and 10-12 above, and further in view of Stanley Wolf, "Wolf" (Silicon Processing for the VLSI Era, Vol. 1).

Regarding claims 6 and 7, the Examiner admitted that Givargizov fails to explicitly disclose performing a first metal sputter operation upon the substrate, following the first lithography operation performed upon the substrate and the layers thereof and performing a chemical mechanical polishing operation upon the substrate and the layers thereof following the first metal sputter operation performed upon the substrate.

The Examiner argued, however, that Wolf discloses performing a first metal sputter operation upon the substrate, following the first lithography operation performed upon the substrate and the layers thereof (citing page 334 of Wolf) and performing a chemical mechanical polishing (CMP) operation upon the substrate and the layers thereof following the first metal sputter operation performed upon the

substrate (citing pages 238-239 of Wolf). The Examiner therefore argued that it would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Givargizov and Wolf to enable the first metal sputter operation and a chemical mechanical polishing operation upon the substrate of Givargizov to be performed and furthermore to simplify the problem of depositing films with uniform thickness over large wafers (citing page 335 of Wolf) and to prevent mechanical work damage from remaining on the polishing film (citing page 238 of Wolf).

The Applicants respectfully disagree with this assessment. Neither Wolf or Givargizov, alone or in combination with one another teach or suggest "depositing a thick oxide layer upon a substrate, wherein a thickness of said thick oxide layer is thick with respect to a thickness of said substrate". Applicants, on the other hand, do teach a thick oxide layer, as indicated by Applicants' FIGS. 4-5 and specification thereof. Such a thick oxide layer is inherently present in claims 6 and 7. Additionally, it is not clear that page 233 of Wolf teaches depositing films with uniform thickness over large wafers or that page 238 of Wolf teaches preventing mechanical work damage from remaining on the polishing film.

Also, the Examiner has not provided a motivation for combining Wolf with Givargizov to teach all of the features (including the thick oxide layer) taught by Applicants' claims. The Examiner has not provided a reasonable explanation of why one skilled in the art would have been motivated to have combined Wolf with Givargizov to teach the use of such a thick oxide layer, including a first lithography operation performed upon the substrate and the layers thereof a chemical mechanical polishing (CMP) operation performed upon the substrate and the layers thereof following the first metal sputter operation performed upon the substrate.

The Applicants remind the Examiner that the references may not be taken out of context and combined without motivation, in effect producing the words of

the claims (and sometimes, not even the words or concepts of the claims), without their meaning or context. The resultant combination would not yield the invention as claimed. The claims are rejected under 35 U.S.C. 103 and no showing has been made to provide the motivation as to why one of skill in the art would be motivated to make such a combination, and further fails to provide the teachings necessary to fill the gaps in these references in order to yield the invention as claimed.

The rejection under 35 U.S.C. 103 has provided no more motivation than simply to point out the individual words of the Applicants' claims among the references, but without the reason and result as provided in the Applicants' claims and specification, and without reason as to why and how the references could provide the Applicants' invention as claimed. Hindsight cannot be the basis for motivation, which is not sufficient to meet the burden of sustaining a 35 U.S.C. 103 rejection.

Thus, claims 6 and 7 of the present invention are not taught or suggested by Givargizov, alone or in combination with one another. Combining these references fails to teach or yield the invention as claimed. The combination of these references fails to teach or suggest all the elements of the claims. Further, one of skill in the art would not be motivated to make such a combination. Therefore, the present invention is not obvious in light of any combination of Givargizov. Withdrawal of the §103 rejections is therefore respectfully requested.

IV. Allowable Subject Matter

The Examiner indicated that claims 8-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Applicants have therefore submitted a new claim 26 by amendment herein, which constitutes an independent claim combining all of the features of claims 8-9, including base and intervening claims thereof. Newly submitted claims 27-29 are

also included herein by amendment. It is believed that because claim 26 is allowable that claims 27-29 should also be allowed.

V. Conclusion

In view of the foregoing discussion, Applicants have responded to each and every rejection of the Official Action. Applicants have clarified the structural distinctions of the present invention by amendments herein. The foregoing discussion and amendments do not present new issues for consideration and that no new search is necessitated. Such amendments are supported by the specification and do not constitute new matter. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. §02 and §103, and further examination of the present application.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned representative to conduct an interview in an effort to expedite prosecution in connection with the present application.

Respectfully submitted,

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